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VARIOUS.

Substitutes for Gold and Silver.

Some very beautiful alloys, applicable as substitutes for gold and silver in the manufacture of jewelry and similar purposes, have been produced by Messrs. Meiffren & Co., of Marseilles. To make an alloy having the appearance and color of gold, they place in a crucible copper as pure as possible, platinum, and tungstic acid in the proportions below stated, and when the metals are completely melted, they stir and granulate them by running them into water containing 500 grammes of slaked lime and 500 grammes of carbonate of potash for every cubic meter of water. This mixture, dissolved in water, has the property of rendering the alloy still purer. They then collect the granulated metal, dry it, and after having remelted in a crucible, they add a certain quantity of fine gold in the proportion hereinafter specified. An alloy is thus produced which, when run into ingots, presents the appearance of red gold of the standard 750·1000, and to which may be applied the name of "aphthite", or unalterable. They can change the color of the alloy by varying the proportions of the different metals. As flux they use boric acid, nitrate of soda, and chloride of sodium previously melted together in equal proportions. The proportion of flux to be employed is 25 grammes per kilogramme of the alloy. The proportions they employ, by preference, for producing an alloy of red gold color are: Copper, 800 grammes; platinum, 25; tungstic acid, 10; and gold, 170 grammes.

The alloy used in imitation of silver consists of iron, 65 parts; nickel, 23 parts; tungsten, 4 parts; aluminum, 5 parts; and copper, 5 parts. The iron and tungsten are melted together, and then granulated, as in the case of the previous alloy, except that in this instance the water into which the mixture is run contains one kilogramme of slaked lime and one kilogramme of carbonate of potash per cubic meter. The nickel, copper, and aluminum are also melted together and granulated by running into water containing the same proportion of lime and potash. Care should be taken during the melting to cover the metals contained in the two crucibles with a flux composed of one part of boric acid to one part of nitrate of potash or nitre. In the crucible containing the aluminum and copper they place a lump of sodium of about two grammes in weight when treating five kilogrammes of the three metals (nickel, copper, and aluminum) together to prevent oxidation of the aluminum, and they also add charcoal to prevent oxidation of the copper. Before granulating the metal in each crucible it should be well stirred with a fire-clay stirrer.

The granulated metals are dried, as in the former case, then melted together in the same crucible in the proportions above indicated, and well stirred, after which the alloy is run into ingots. The alloy thus obtained, to which may be given the name of "sideraphthite" (or unchangeable iron), presents the same white appearance as platinum or silver, and is not more expensive than German silver. These improved metallic alloys are capable of resisting the action of sulphureted hydrogen, are unattacked by vegetable acids, and but slightly attacked by mineral acids; they are also perfectly ductile and malleable.

London Mining Journal.

Wood Stains.

To turn oak black so as to cause it to resemble ebony the wood should be immersed for forty-eight hours in a hot saturated solution of alum, and then brushed over several times with a logwood decoction, prepared as follows: Boil one part of best logwood with ten parts of water, filter through linen, and evaporate at a gentle heat until the volume is reduced one-half. To every quart of this add from ten to fifteen drops of a saturated solution of indigo, completely neutral. After applying this dye to the wood, rub the latter with a saturated and filtered solution of verdigris in hot concentrated acetic acid, and repeat the operation until a black of the desired intensity is obtained. To imitate rosewood a concentrated solution of hypermanganate of potassa is spread on the surface of the wood, and allowed to act until the desired shade is obtained. Five minutes suffice ordinarily to give a deep colour. A few trials will indicate the proper proportions. The hypermanganate of potassa is decomposed by the vegetable fibres with the precipitation of brown peroxide of manganese, which the influence of the potassa, at the same time set free, fixes in a durable manner on the fibres. When the action is terminated, the wood is carefully washed with water, dried, and then oiled and polished in the usual manner. The effect produced by this process on several woods is remarkable. On the cherry, especially, it gives a beautiful red colour.

The Furniture Gazette.

The Wedgwood Institute.

The small but well-planned Picture Gallery and Museum which are being added to the Wedgwood Institute at Burslem are nearly complete, and it has been determined to open them in September with an exhibition which promises to be one of an exceptionally interesting character. The *Staffordshire Advertiser* says that the Government will send down the whole of the purchases of pottery and porcelain made by the Science and Art Department at the Paris Exhibition of 1878, and these acquisitions will be supplemented by examples of a varied character. Advantage will further be taken of the occasion to bring together a collection of the works of two painters who attained great eminence, and whose reputation has not heretofore had any special recognition in their native county. James Holland was a native of Burslem, and worked for many years as a china painter in that town. A number of valuable sketches, with a few more important examples of his work, will be sent down from South Kensington, and the committee hope to be favoured with the loan of others from private owners. But the chief interest will attach to the collection of the works of George Mason, who, born at Wetley Abbey, died some seven years ago after having attained the distinction of A.R.A., and given evidence of an artistic power which promised to place him in the foremost rank of the painters of his day. His portrait by Mr. Val Prinsep, A.R.A., and a remarkable selection of studies and sketches will be contributed by Mrs. Mason.

Timber from straw.

Whether or not bricks can be made without straw, an American inventor, of Busnell, Illinois, has, it is said, succeeded in making hard wood with nothing but straw. To make hard wood lumber out of common wheat straw, with all effects of polish and finish which are obtainable on the hardest of black walnut and mahogany, at as little cost as clear pine lumber can be made up for, is the claim of the inventor, and samples produced go far toward verifying his claims. The process is as follows: — He takes ordinary straw board; such as is usually manufactured at any paper-mill is used for the purpose. As many sheets are taken as are required to make the thickness of lumber desired. These sheets are passed through a chemical solution which thoroughly softens the fibre, and completely saturates it. The whole is then passed through a succession of rollers, dried and hardened during the passage, as well as polished, and then comes out of the other end of the machine, hard, dry lumber ready for use. The inventor claims that the chemical properties hardening in the fibre entirely prevent water-soaking, and render the lumber combustible only in a very hot fire. The hardened finish on the outside also makes it impervious to water. Some samples recently shown could hardly be distinguished from hardwood lumber.

The Furniture Gazette.

Gilding on Steel.

An old process, — which, however, is by no means universally known, — is as follows: — By shaking a solution of gold leaf in aqua regia with ether, or naphtha, the gold will leave the acids to combine with the other liquid. Polished steel surfaces, such as knives, scissors, &c., on being plunged in this solution, when dry become covered with a coat of gold, which is an excellent preservative from rust. Letters, designs, &c., may be traced by means of a pen, pointed stick, or brush, and as the ether evaporates, the gold will remain fixed.

The Electrician.